



ESTES INDUSTRIES
1295 H Street
Penrose, CO 81240

The World Leader in Model Rocketry

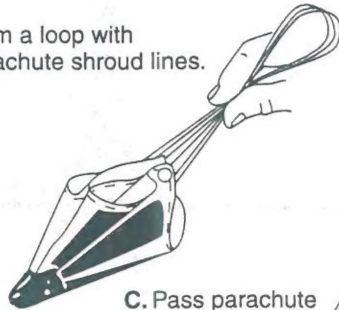
FREE FALL™

READY-BUILT™ FLYING MODEL ROCKET INSTRUCTIONS

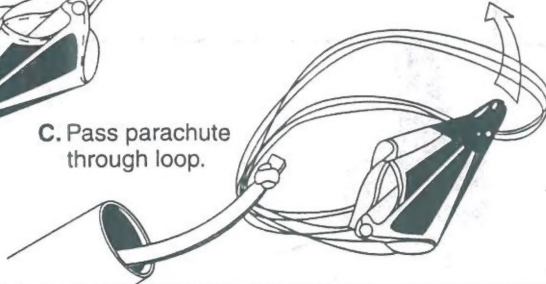
EST 1816

1. ROCKET PARACHUTE ATTACHMENT

A. Form a loop with parachute shroud lines.



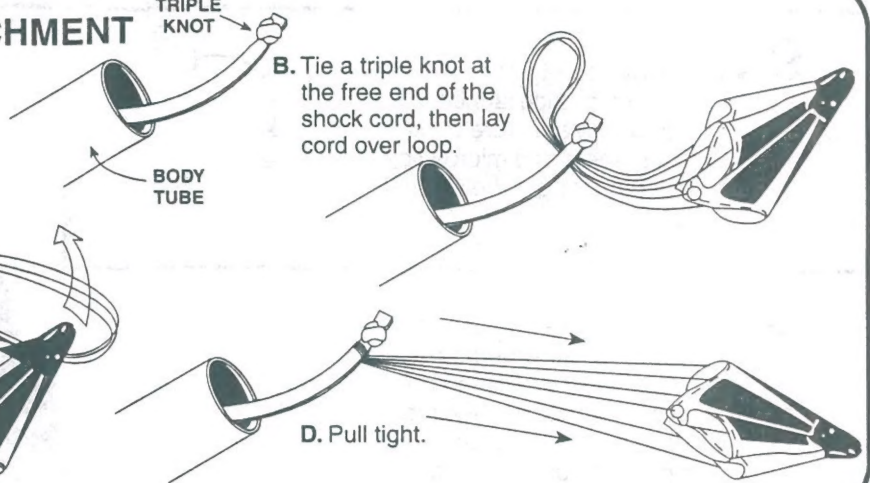
C. Pass parachute through loop.



TRIPLE KNOT

BODY TUBE

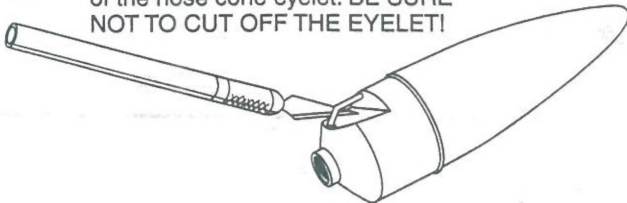
B. Tie a triple knot at the free end of the shock cord, then lay cord over loop.



D. Pull tight.

2. NOSE CONE STREAMER ATTACHMENT

A. Carefully clean any excess plastic out of the nose cone eyelet. BE SURE NOT TO CUT OFF THE EYELET!

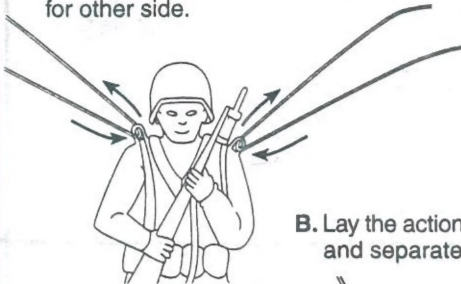


B. Thread half the length of the streamer through the eyelet and tie in place.



3. ACTION FIGURE PARACHUTE ATTACHMENT

A. Thread half the length of one of the shroud lines through one of the harness holes on action figure's shoulders. Repeat for other side.



B. Lay the action figure on his back and separate lines as shown.



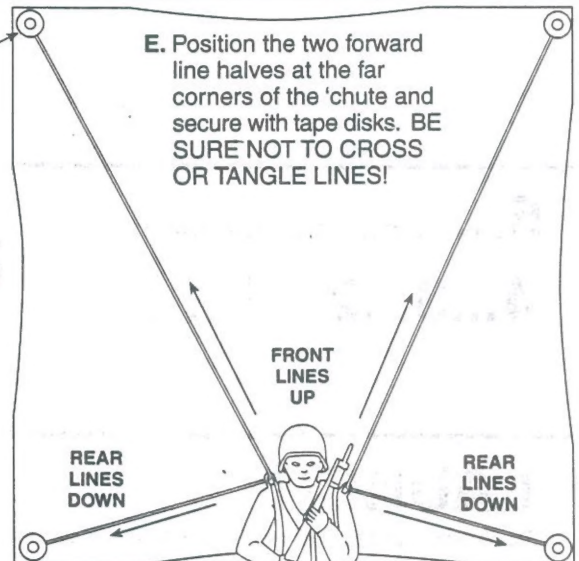
FRONT LINE UP

REAR LINE DOWN

C. Place the clear plastic 'chute as shown.

TAPE DISK

E. Position the two forward line halves at the far corners of the 'chute and secure with tape disks. BE SURE NOT TO CROSS OR TANGLE LINES!



D. Position the rear line halves at the corners closest to his head, and stick each end to its corner with a tape disk.

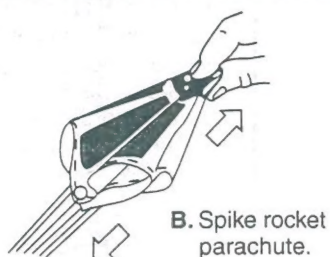


4. PREPARE PARACHUTES AND STREAMER FOR FLIGHT

Loosely crumple and insert seven squares of recovery wadding into rocket body.

IMPORTANT:

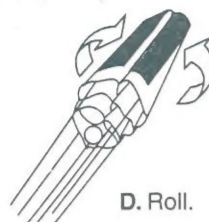
Wadding must be in place and slide freely for rocket to work properly!



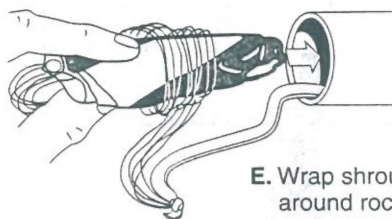
B. Spike rocket parachute.



C. Fold.

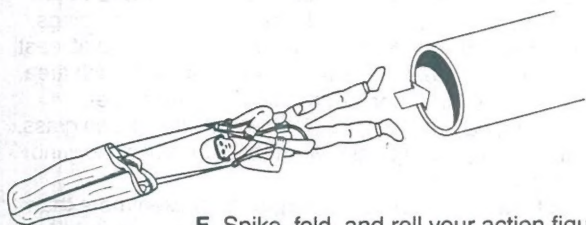


D. Roll.

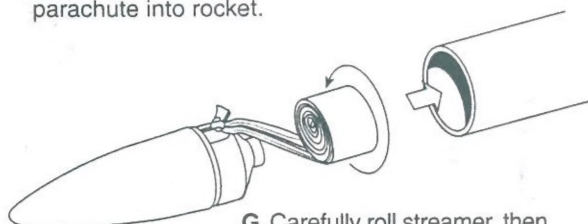


Parachute should slide easily into body tube. If fit is too tight, unfold and repack again.

E. Wrap shroud lines loosely around rocket chute. Insert parachute into rocket.



F. Spike, fold, and roll your action figure's chute but do not wrap lines around chute. Simply slide your action figure into the rocket body as shown.



G. Carefully roll streamer, then slide streamer and nose cone into place as shown.

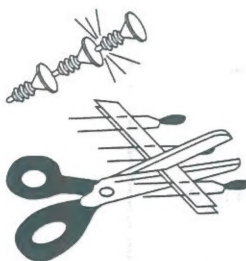
5. PREPARE ENGINE FOR FLIGHT

WARNING - FLAMMABLE

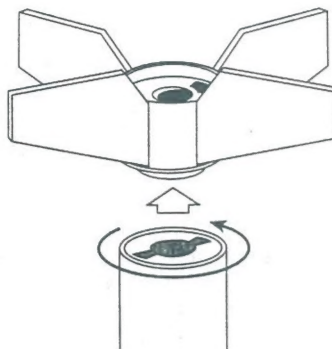
BEFORE PROCEEDING, READ INSTRUCTIONS AND NAR SAFETY CODE INCLUDED WITH ENGINES.

PREPARE YOUR ENGINE **ONLY** WHEN YOU ARE **OUTSIDE** AT THE LAUNCH SITE PREPARING TO LAUNCH!

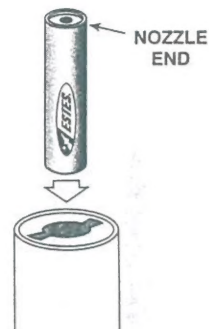
If you do not use your prepared engine, remove the igniter before storing your engine.



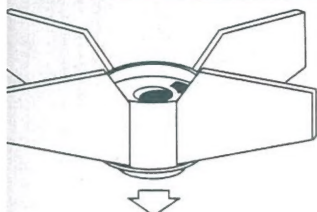
A. Separate igniter and igniter plug.



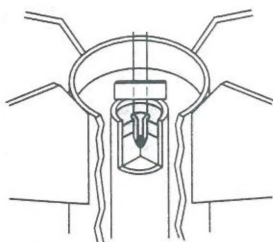
B. Twist off plastic fin unit at rear of rocket.



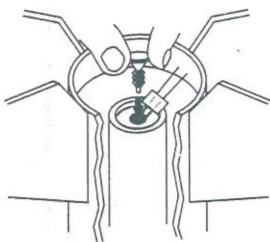
C. Slide engine into rocket body as shown.



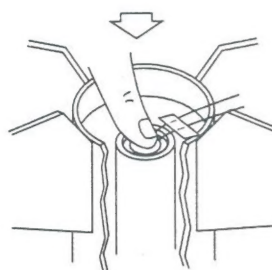
D. Twist plastic fin unit into locked position to hold engine in place.



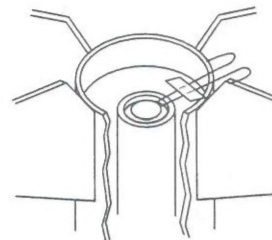
E. Hold rocket upright, drop in igniter. Igniter must touch propellant.



F. Insert igniter plug.



G. Firmly push all the way in.



H. Bend igniter wires back.

6. PREPARE FOR LAUNCH



4

At peak altitude (apogee), the nose cone, action figure and rocket chute are ejected from the rocket body.



3

Rocket continues to climb during coast phase.



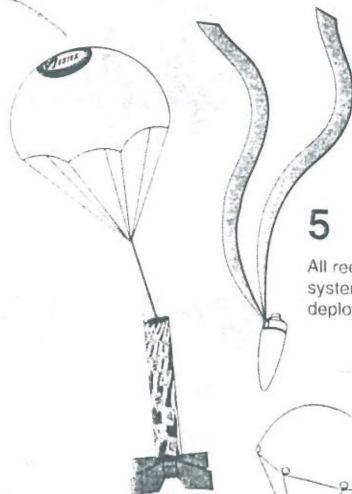
2

Rocket accelerates and gains altitude.



1

Electrically ignited rocket engine provides rocket liftoff.



5

All recovery systems are deployed.

6



Touchdown! Replace the engine, igniter and recovery wadding, ready to launch again!

When the Free Fall™ rocket reaches apogee (peak altitude), the rocket parachute, action figure and nose cone are ejected. Ask two friends to act as a recovery force to help you track the rocket, nose cone, and action figure as they descend. Instruct your recovery force to keep a close eye on their targets - even a slight breeze can carry your pieces far away!

LAUNCH SUPPLIES

To launch your rocket, you will need the following:

- Launch Pad (Estes Porta-Pad® II)
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: B4-2, B6-2, C5-3, C6-3 or C6-5.

Use a B6-2 for your first flight to become familiar with your rocket's flight pattern.

Use only Estes products to launch this rocket.

PROJECTED ALTITUDES

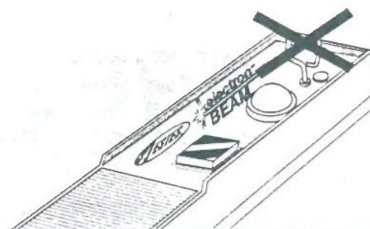
ENGINE	FEET	METERS
B4-2	182	55
B6-2	200	61
C5-3	500	151
C6-3/C6-5	470	143

TIPS FOR FLYING YOUR ROCKET

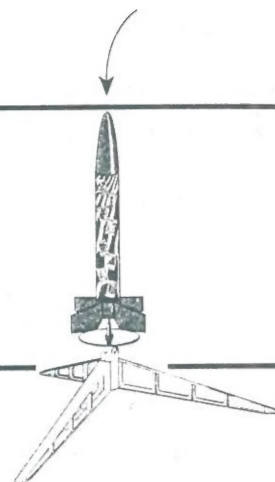
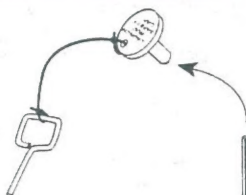
- Choose a large field away from power lines, buildings, tall trees, and low flying aircraft. Try to find a field at least 250 feet (76 meters) square. The larger the launch area, the better your chance of recovering your rocket.
- Launch area must be free of dry weeds and brown grass.
- Launch only during calm weather with little or no wind and good visibility.
- Don't leave parachutes or streamer packed more than a minute or so before launch during cold weather (colder than 40° Fahrenheit [4° Celsius]).
- Always follow the National Association of Rocketry (NAR) MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities. The safety code is enclosed with this kit.

COUNTDOWN AND LAUNCH

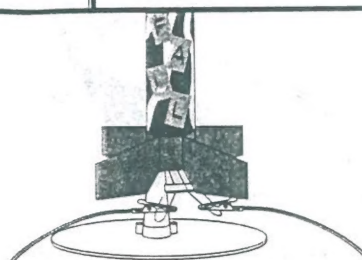
- 10...** Safety key must not be in launch controller. The safety cap with safety key attached should already be on the launch rod.



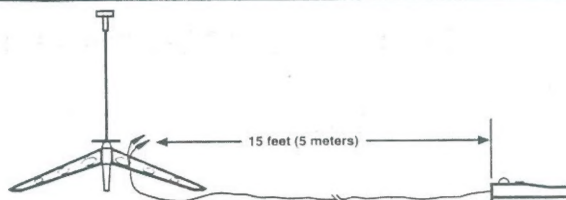
- 9...** Remove safety cap from launch rod, slide launch lugs over rod. Make sure rocket slides freely and micro-clips are clean for good electrical contact.



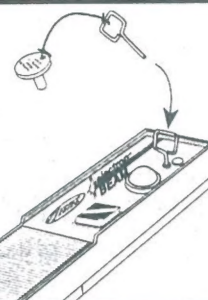
- 8...** Attach micro-clips to the igniter wires. Arrange the micro-clips so they do not touch each other or the metal blast deflector. Attach micro-clips as close to protective tape on igniter as possible.



- 7...** Move everyone back from your rocket as far as launch wire will permit (at least 15 feet - 5 meters).

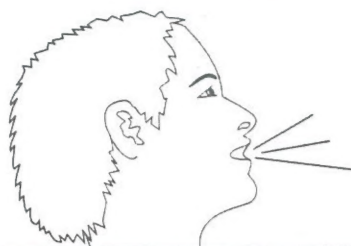


- 6...** Insert safety key to arm the launch controller.



- 5...** Start audible countdown.

4...3...2...1.....



LAUNCH!

Push and hold button until engine ignites.

For safety, immediately remove safety key from launch controller and replace safety cap on launch rod.

MISFIRES

When an ignition failure occurs, **remove the safety key** from the launch control system and **wait one minute before approaching the rocket**. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant. Broken or chipped coating will not affect the performance of the igniter. Reinstall the igniter plug as illustrated previously. Repeat the countdown and launch procedure.